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# The Eye in the Arts

*By* HOYT SHERMAN[1]

THERE are strange quirks in history. One of the strangest is that, over the centuries, those who have been teaching the visual arts have left out of account any realistic consideration of the instruments of vision—the eyes. Such an oversight cannot be explained in terms of any reasonable approach to an understanding of the processes of learning to draw and paint. Great artists, notably Rembrandt and Cézanne, have appreciated and tried to explain the importance of eye functioning, but the rest of us have failed to comprehend. Only recently have we come to believe that the study of eye behavior has anything to do with learning to teach the fine arts.

The possibilities are quite plain. To see and to act upon a pictorial motif requires a quality in vision which may be resolved into abilities to see a focal point, to see the whole field as related to the focal point, to make judgments of depth in space, and to discriminate subtle variations in tonal qualities. All of these specific abilities are subject to objective testing; hence, as a training program in drawing and painting goes forward, progress of students in the development of these abilities can be measured.

The purpose of this article is to report on the development of these abilities during an experimental project in elementary drawing and painting. The trend in the results is unmistakable: the development of ability in drawing and painting is correlated with the development of ability in seeing. The number of cases is too small to justify final conclusions, but the findings are clear and consistent enough to justify further experimentation.

The training program was not conventional; indeed, to the uninitiated, it would appear to be bizarre. The studio was blacked out; students worked in the dark. Moreover, they wore

[1] See editorial Co-operative Research on page 25.

masks between their eyes and their hands so that they could not watch what they were doing. For twenty periods of thirty minutes each, they drew from lantern-slide images, each flashed on the screen for less than one-tenth of a second. Later, they drew odds and ends of objects suspended from the ceiling and momentarily illuminated by flash exposures. The students worked in an entirely informal atmosphere. Music was played throughout the working period. There were no lectures and no discussion of art as such—just chit-chat, friendly conversation about everyday things, and occasional singing. Practically nothing of the "technique" of drawing and painting was explained. Students were given charcoal and put to work; later they were given paints and after less than ten minutes' explanation on how to handle the brush, were started on painting problems. The total time given to the program was less than twenty hours of studio time, distributed through six weeks.

None of the students had had training before, except a very few who had received the usual instruction in secondary schools. Indeed most of the students were not interested in the fine arts, having been chosen by chance and through their willingness to participate in a novel experiment.

TESTS to check eye behavior were given to the students before and after the training period. In the interim the tests were forgotten and full attention was given to the main business of the experiment, which was learning how to draw and paint. The tests, set up by the School of Optometry and the Department of Psychology, were adapted from standard tests in these fields. Glenn Fry, director of the School of Optometry, built the extensive apparatus and directed the testing program. This program was itself experimental in many respects; in future testing we shall be able to get more complete data.

Tests were given for five abilities: central acuity, peripheral acuity, central stereo-acuity, peripheral stereo-acuity, and brightness discrimination. The following paragraphs give a brief statement of the function of each test and a report on the results.

The test for central acuity measures the degree to which the subject can perceive the form of a target placed in the center of the field of vision. Variations are measured in terms

of the size of the target required in each given case. The standard of measure is the Snellen Fraction by which normal vision is expressed as 20/20. The numerator is a symbol for the distance between the eye of the observer and the test target, and remains at 20. The denominator is a symbol for the size of the target, and varies with the ability of the observer. Results are reported in terms of the denominator. The smaller the number, the smaller the target, and the greater the ability of the subject.

The test of peripheral acuity measures the ability of the subject to perceive the form of a target which is placed at increasing distances to the right and the left of the center of vision. The standard of measure is the number of degrees in the angle formed by two lines, one of which extends from the eye of the subject to the center of vision, and the other from the eye to the point farthest from the center at which the target can be seen. The higher the number of degrees reported, the wider the angle of vision, and the greater the ability of the subject.

The test of central stereo-acuity measures the ability to make judgments of depth at the center of vision. The standard of measure is the number of centimeters of variance between perfect alignment and the subject's alignment of two targets. The smaller the number, the more accurate the setting, and the greater the ability of the subject.

The test of peripheral stereo-acuity measures the ability to make judgments of depth at the periphery of the field of vision. The standard of measure is the same as for peripheral acuity, as defined above, except that the limit of the field of vision is defined as the furthest point from the center at which the subject can align two test targets with variance of less than 10 centimeters from a perfect setting. The larger the number, the wider the angle of vision, and the greater the ability of the subject.

The test of brightness discrimination measures the ability to discriminate subtle shadings of light. Variations are measured in terms of the difference in light intensity at which the subject can discriminate between a spot of light and its background. The standard of measure is usually expressed in foot-candles of light per square meter. In this experiment a 10-point linear scale, starting at zero foot-candles and ending

at .4 foot-candles, is used for convenience in recording and reporting results. The smaller the number, the nearer the light value of the spot to the light value of the background, and the greater the ability of the subject.

To afford a point of comparison for the test results on the experimental group, a control group, composed of students who were not involved in the training, was given four of the five tests at the same time and under the same conditions as the experimental group.

Table I presents a summary of the results. Column 2 gives the number of cases in each group; column 3, the range of scores on the pre-test; column 4, the average score on the pre-test; column 5, the range of scores on the post-test; column 6, the average score on the post-test; column 7, the gain (or loss) between the average on the pre-test and the post-test; and 8, the percentage of chance, or the number of times in one hundred at which the gain might have been due to chance.[2]

The experimental group gained on all five tests, and gained more than the control group in all cases where there were comparisons. The gains made by the experimental group were statistically significant in central acuity, peripheral acuity, and peripheral stereo-acuity. Chance would account for these gains less than 5 times in 100. Gains in brightness discrimination were enough to suggest a trend in the positive direction but not enough to reach a high degree of statistical reliability. Gains in central stereo-acuity were not statistically significant.

Gains made by the control group were insignificant on all tests except central acuity, indicating that practice in taking this particular test probably accounted for some of the gain in the scores of the experimental group as well. If, however, it is assumed that the gain from practice would have been the same for the experimental group as for the control group, the balance gained by the experimental group would still have been statistically significant at the 2–per cent level. In terms of individual cases, 72 per cent of the students in the experimental group exceeded the average gain of the control group in central acuity. The training therefore seems to have had a significant effect in increasing this ability.

[2] In calculating chance, the t-score formula was used. *See* Lindquist, E. F. *Statistical Analysis in Educational Research.* Boston: Houghton Mifflin Company, 1940. Chap. III.

When the gain of the experimental group in peripheral acuity is expressed in terms of the area of circles within which vision was effective on the pre- and post-tests, the increase in the field of vision was eighty-six per cent, which means a significantly expanded visual world. Gains on another experimental group of twelve students, not included in the table because a different method of testing was used and no control group was available for comparison, showed an even greater gain and a chance factor of less than one in one thousand.

Gains in peripheral stereo-acuity were even more striking. There actually was a gain of 400 per cent in the area of circles within which depth judgment was effective.

TABLE I

RESULTS ON TESTS OF EYE BEHAVIOR

| ABILITY | No. | PRE-TEST | | POST-TEST | | GAIN | PERCENTAGE OF CHANCE |
|---|---|---|---|---|---|---|---|
| | | Range | Average | Range | Average | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Central acuity— | | | | | | | |
| Experimental | 25 | 38.4–15.7 | 22.3 | 26.2–11.5 | 18.9 | 3.4 | 0.1 |
| Control | 12 | 28.6–16.4 | 22.0 | 26.1–17.2 | 20.6 | 1.4 | 5 |
| Peripheral acuity— | | | | | | | |
| Experimental | 13 | 12.6–0 | 5.5 | 14.0–4.1 | 7.5 | 2.0 | 5 |
| Control | 10 | 12.5–0 | 6.0 | 12.2–1.8 | 6.7 | 0.7 | 50 |
| Central stereo-acuity— | | | | | | | |
| Experimental | 11 | 6.4–0.5 | 3.6 | 5.9–0.5 | 2.8 | 0.8 | 20 |
| Control | 8 | 3.1–0.6 | 1.9 | 6.9–0.8 | 3.0 | —1.1 | 20 |
| Peripheral stereo-acuity— | | | | | | | |
| Experimental | 12 | 0–4 | 2.0 | 1.0–7.0 | 4.1 | 2.1 | 1 |
| Control | 10 | 0–5 | 2.4 | 1.0–8.0 | 3.1 | 0.7 | 20 |
| Brightness discrimination— | | | | | | | |
| Experimental | 11 | 7.9–4.7 | 6.1 | 6.4–4.2 | 5.4 | 0.7 | 10 |

ON THE basis of logic and an understanding of the training program, these results are just about what one would expect. Greatest gains were made in those abilities which were exercised most during the training program, and least gains were made in those abilities which were exercised least. The teaching continually required practice in establishing a center of focus, in seeing the whole at a glance, and in drawing bold, broad patterns delineating the whole field—activities which emphasized central acuity, peripheral acuity, and peripheral stereo-acuity respectively. Comparatively little opportunity

was offered for concentration on tonal variations and still fewer requirements were made for refined depth judgments of fixed points. These characteristics of the training are reflected in the results on the tests of brightness discrimination and central stereo-acuity respectively.

The evidence is clear, then, that the kind of training in drawing which was used in this experiment was also a training in seeing, and that as the ability in drawing developed, ability in seeing developed, particularly at the points where the most practice was required.

The writer doubts that just any kind of training in drawing and painting would bring these results. He does hold the view, however, that the most effective programs in drawing and painting will show changes in eye behavior. A training program in arts which goes deep enough to establish fresh abilities in seeing is also likely to go deep enough to open up channels of ready action throughout all of the student's behavior so that he has much more fluid power for expressing himself. The drawings and paintings of the students in this experiment showed unusual improvement in their capacities to express themselves, thus substantiating the hypotheses on which the project was based.

This inter-effect of improvement in drawing on improvement in seeing must not, however, be unwittingly interpreted to mean that high scores on the test necessarily mean high creative ability in the visual arts. Much more is involved in creative drawing than just seeing. Those students in the experiment who had high scores on one or more of the tests, or who showed marked improvement in some of their scores, did the most outstanding creative work, but the creative work was due to the training in drawing which utilized and developed their visual abilities, and not to these abilities per se. The tests are optometric tests, not tests of creative ability, and are therefore to be used simply as indicators of what has been done or might be done through a training program to reach students at a fundamental level.

This assumption of relation between ability to draw and ability to see is but one of several basic tenets in a total concept of "perceptual unity" which has been developed to give guidance to a full program of training students in the visual-creative arts. The more complete story is to be presented in a forthcoming publication.

# A Laboratory School Evaluates Its Contributions to Teacher Education

*By* MARGARET KOOPMAN

THE University School of Ohio State University has as its principal function contributing to the democratic program of teacher education which is the central concern of the College of Education, of which the school is a department. This article reports the results of an evaluation of the School's contributions to teacher education during 1942, which was made under the direction of the Evaluation Committee of the School during the winter quarter, 1943.[1]

Fortunately for the committee, the functions of the School had been defined specifically in a statement prepared by the Policy Committee of the College and approved by the staff of the School. This statement was used as the basis of the evaluation. The following is condensed from it:

The major responsibility of the University School is to contribute to the program of teacher education in Ohio with which all departmental staffs of the College are concerned. To contribute to the entire program of teacher education [the University School]

1. . . . must be a good school and must strive continuously to make itself the finest place possible for children to grow and learn in a democratic setting.
2. . . . must be a demonstration school in the sense of demonstrating ways of formulating a school philosophy and of working out this philosophy.
3. . . . must be an "experimental" school in the sense that intelligent hypotheses for improving education should be tried out carefully, should be studied critically, and the program reconstructed in the light of evidence secured.
4. . . . should be a laboratory for the development of methods to facilitate relationships between the College of Education and Ohio schools generally.
5. . . . has an obligation to make contributions to improvements in the educational practices of the state and nation.
6. . . . must have "two-way" relationships with every department in the College.

[1] This article is a condensation of a mimeographed bulletin published by the College of Education in 1943. It was prepared by the Evaluation Committee of the University School with the co-operation of other staff members of the School and of other departments of the College. Members of the Evaluation Committee were: Frieda Heller, Cecile Swales, Louis Raths, *consultant*, and Margaret Koopman, *chairman*.

Since the purpose of the evaluation was to facilitate planning for the future, the committee wished to make its findings available to the School staff for use in the planning meetings held during the spring. Hence, it was planned to complete the project by the end of the winter quarter. This necessitated limiting the scope of the study. For this reason a thoroughgoing evaluation of the School's work with respect to the first of the functions stated above was not attempted. With respect to this function, the committee attempted to answer only one question: Does the School demonstrate a democratic philosophy? The committee did not attempt systematically to study Function 4.

Various methods were used in gathering data. The answer to the question as to whether the School demonstrates a democratic philosophy was sought by analyzing accounts of observations made by 18 graduate students, all experienced teachers and all instructed in techniques of observing and recording data. Each agreed to observe the work of two teachers at least twice; a total of one-hundred hours of such observation were carried on. Admittedly this provided too narrow a basis for anything more than a highly tentative answer to such a complex and basic question.

Records of all observations made by the many visitors in the School were tabulated and analyzed to determine the extent to which it performed its function as a demonstration center. The director of the School, members of the committee on research, and other staff members were interviewed to discover what research and experimentation had been carried on during 1942. An interview schedule was then submitted to every teacher who had had any part in such work. Data on the services of the School to the state and nation were secured through the use of a questionnaire and by analyzing personnel reports. Contributions to the program of teacher education in the College were sought by interviewing faculty members who had responsibilities for supervision of student teachers, and by directing an inquiry to all members of the College staff in regard to other purposes for which they use the School and its staff members.

In answer to the question as to whether the School demonstrates a democratic philosophy, an analysis of the reports of the 18 graduate students led to the following conclusions.

In the Lower School (first six grades) the materials, purposes, and methods give evidence of a democratic philosophy in practice. The adverse judgments of the graduate students were few in number but highly pointed. In their judgment the School needs seriously to consider its relationship to the community and to introduce a more functional type of school-community instruction into classroom activities.

In the Upper School the democratic philosophy seemed to be carried through in most classrooms. A great variety of splendid materials and equipment were utilized in most areas of instruction, and these seemed to be related to problems of interest and concern to pupils.

THERE was evidence that the major purposes of instruction were to promote individual responsibility by means of reflective thinking, participation, and co-operation. In social studies, English, and core courses, emphasis was placed on pupil thinking, planning, and research; social sensitivity and the ability to evaluate; acquaintance with some of the major social-economic problems; appreciation of modern literature; the development of effective skills in various subjects; and school-community interdependence. In the areas of fine arts, industrial arts, and home economics, subject-matter played a subordinate part in the emphasis upon pupil development, and pupils themselves participated in deciding upon subject-matter and activities. In science and mathematics, treatment of individual problems occurred, but apparently, where there was emphasis on reflective thinking, it was in terms of the subject-matter provided by the area, rather than of pupil experiences. In all areas, however, pupils' problems were dealt with more fully than in most schools.

The graduate students found wide variation in classroom procedures, particularly in regard to the rôle played by the teacher. Procedures ranged from those in which almost all attention was focused on the teacher, to those in which the teacher relinquished leadership almost entirely. Generally, however, the emphasis was strong on individual and group guidance, pupil participation and pupil-teacher planning; there were many instances where student initiative and student leadership were encouraged.

Considerable attention was given to school-community rela-

tionships in core, social-studies, and English classes. In other areas use was made of isolated aspects of the community, but in the school as a whole there was too little evidence that students were being made aware of community conditions, that community resources were being utilized to promote learning, and that there was actual concern on the part of the school for improvement of community conditions.

The evidence is certainly sufficient to warrant the conclusion that the University School may be characterized as being centrally concerned with democratic values. Nevertheless the faculty represents also points of view which are at odds with democratic principles. It seems to the Evaluation Committee that the school will progress more rapidly if these differences in point of view are recognized and a plan is set up to reconcile them or at least to take them into account.

THERE is abundant evidence that the school is functioning effectively as a demonstration center. During 1942 it was in constant use by off-campus observers as well as students in the University. A total of 592 off-campus observers, including administrators and public-school, college, and university teachers, observed the work of the school during the winter, spring, and autumn quarters. Observations made by students during the year, including the summer session, totaled 5,571. The distribution of the 3,015 student observers during the regular school year was as follows: secondary education 51 per cent, elementary education 17 per cent, Freshman survey of education 11 per cent, psychology 8 per cent, home economics 5 per cent, and miscellaneous 8 per cent.

The data summarized above have to do with quantitative aspects of the School's service as a demonstration center. The conclusions reported in earlier paragraphs with respect to the democratic character of its work indicate that qualitatively also the school was highly effective in this area of its responsibility.

A study of research and experimentation in University School reveals an experimental attitude and much greater readiness to accept change than is commonly found. Rapid adaptations to the demands of a wartime situation are to be seen in the guidance program, the curriculum, the increased emphasis upon work service, and, in the Lower School, in the extension of the school day. Thirteen research and experi-

mental projects were under way during 1942. These ranged from a carefully planned follow-up study of University High School graduates and an extensive program of curriculum development to the informal testing of new ideas in education by individual teachers. Co-operation with other departments in the College is evident in most of the experimental projects that have been carried on. In general, experimentation has stemmed from the interest which an individual or a small group has had in a problem; in a very few cases it has resulted from the faculty's concerted attack upon a basic school problem.

The committee believes that if the school is to perform its function as an experimental school most effectively, research and experimental projects should be planned more systematically. More attention should be given to the purpose and value of each study, allocation of responsibility and shifting of teachers' loads, methods of sharing and utilizing findings, and ways of extending the co-operative relationship which already exists between the School and other departments of the College. Moreover, an effort should be made to increase the number of projects which are of an all-school character, arise from actual problems of the School, and offer an opportunity for co-operative endeavor.

The School rendered extensive and varied services to the state and nation in addition to those rendered to the immediate community. Sixteen staff members made a total of 72 addresses. The school was represented on the boards and committees of 15 national, 5 state, and 7 community organizations, and on the editorial boards of 5 magazines of national circulation. Thirty-two contributions to educational literature—books, chapters in books, and articles—were made during the year. Six staff members helped evaluate schools, 5 served in workshops in Ohio, 5 in out-of-state workshops, and 3 in educational surveys. Numerous instances were found of other types of activity, including services to civic organizations and in civilian defense, consultation on school problems, services to state departments of education, participation in meetings, and broadcasting.

THUS the school is sensitive to its obligations to both the immediate and larger community and is meeting these obligations in a substantial way. Apparently the burden is borne

largely by a portion of the staff. Further study should be given as to how the load may be better distributed and participation made more widespread.

One of the major purposes of the School is to contribute directly to the teacher-education program of the College. One of the important ways of doing this is to provide student-teaching facilities to a limited number of students. During 1942 approximately 90 students did student teaching in the school. Of the 19 faculty members who supervised student teachers, 12 used the University School. Of the 12, 10 believe that the teachers in the University School with whom the students worked were very effective in guiding the work of the students. Some believe that the students receive a distinctive type of experience in the school and become acquainted with desirable ways of getting instructional material, helpful methods of dealing with individual problems, and new and effective techniques of teaching. Closely related to student teaching is the participation of a considerable number of students in the work of the elementary grades and of the science and mathematics classes in the high school. These students serve as assistants to the teachers. The college staff members concerned find this especially helpful to the students.

Various reasons for not using the School were given by the seven departments which make no use of it for student-teaching purposes. One supervisor gives the lack of opportunity for responsible teaching as his reason; another the atypical character of the teaching experience. In one area the program is of such a character that the school cannot conveniently provide the experience needed.

The Evaluation Committee believes that improvements can be made in the School's contributions to student teaching without violating its integrity as a laboratory school. Among these improvements are permitting an increase in the number of student teachers, giving them greater responsibility, and making slight modifications in school practice to meet the objections of certain departments of this College.

Sixty-two, out of 146 members of the College staff responding to the questionnaire, sent students to the school for the purpose of observations; all departments of the College were represented. Similarly, all departments in the College make use of school-staff members in classes, on committees, as con-

sultants, and in other capacities. More than 70 members of departmental staffs indicated that they made this kind of use of faculty members of the School. This is a fine tribute to the School staff, but the question needs to be raised as to whether this sort of service is properly recognized as a part of the regular load of the instructor and whether some members of the staff are overburdened by it.

Members of the school staff participate to a considerable extent in the instructional program of the College as teachers of formal courses, supervisors of student teaching, student counselors, and instructors directing the study of minor problems. This represents a major contribution to the College program.

WHAT is the significance of these findings for the future work of the School? Following the report of the Evaluation Committee, the director of the School was asked to state briefly the lines along which the necessary steps in the development of the program should be attempted. His statement is summarized here as a fitting conclusion to the committee's report. There should be a critical examination of the consistency of practice with the professed democratic purpose of the School. Increased effort should be made to relate the School and its community more closely. The direct service of the School to the College through providing opportunities for observation, service-participation, and student teaching should be extended and improved. This would involve a clearer definition of the types of experience which can be given to student teachers in a school which is both an experimental school and a demonstration center and also co-operative investigation of problems related to student teaching. There is need for careful planning of experimental projects; in this connection, the practice of utilizing the services of staff members of other departments of the College as consultants should be extended. There should be closer co-ordination of the School and other departments of the College in carrying on the whole program of teacher education. Finally, the practice of periodic appraisal of the effectiveness with which the School performs its functions should be continued.

# An Experiment with Off-Campus Rural Workshops

*By* ARNOLD M. CHRISTENSEN

ANTICIPATING an acute shortage of teachers for the rural schools in western Minnesota for 1943–44, the Moorhead State Teachers College held a conference with county superintendents late in January, 1943, to discuss the problem. At this conference the superintendents learned that the State Department of Education would try to alleviate the shortage by issuing limited emergency permits to teachers with one year of training beyond high school, and that teachers then teaching on limited emergency permits probably would be able to get them extended without earning any additional professional credits. But it was emphasized that while granting limited emergency permits on the basis of one year of professional study beyond high school would tend to relieve the situation somewhat, there would still be a serious shortage of teachers for the rural schools. It was pointed out that enrollments in institutions engaged in developing teachers were not adequate to meet the demand for teachers. Because industry and war efforts would continue to recruit more and more young people, it was apparent that a greater number of married women should be encouraged to teach as one of their contributions in the emergency. It was suggested that because of the shortage of help resulting from the growing agricultural and industrial programs, it obviously would be difficult or impossible for many married farm women to be away from their homes during the summer in order to attend college for refresher courses. Accordingly, the superintendents were asked if it would be desirable to set up summer rural workshops in convenient centers off the campus. The superintendents believed that such centers would enable many married women to avail themselves of the opportunity to study and at the same time allow them to attend to their home duties. A tentative statement of conditions under which the workshops might be established was drawn up and another conference was scheduled for March.

The county superintendents throughout the western part of the state were sent a full report of the January conference. Those who were interested were asked to canvass the possibility

of establishing summer workshops in their counties and to report their findings in March. They were cautioned that the resources of the College probably would limit the number of such centers, and, for that reason, it might be desirable to consider more than one county as a field to be served by each center.

At the March conference the superintendents reported wide interest in the off-campus rural workshop experiment. Several were certain that centers would be feasible in their counties, and others had evidence indicating that many former teachers would attend workshops if they were established in near-by centers in other counties. Thereupon, after much discussion, a set of tentative agreements for the operation of the workshops was drawn up; later these became final. These agreements were:

1. A workshop center should be essentially self-sustaining financially. To insure that, a tuition fee of $25.00 would be charged each teacher enrolled.
2. The enrollment in each center should be not less than 20 or more than 35.
3. Only teachers who could not attend the regular summer session at the College should be accepted for admission.
4. A demonstration school should be provided at each center. It should enroll about 15 children selected so as to represent as nearly as possible a normal ungraded rural school of the first six grades.
5. The children enrolled should not pay tuition.
6. The school supplies for the children should be furnished by the College while the books and schoolroom equipment should be provided by the center.
7. The county superintendents should assume the responsibility for housing the workshops. It was thought that each center should ideally be a rural school, but since transportation and housing facilities would necessarily be determining factors, the most practicable plan would be that of utilizing a school building in an urban center where the demonstration school would consist of an ungraded room of urban children.
8. The College should provide two instructors for each workshop, namely, a director and a teacher for the demonstration school.
9. The College should provide instructional material, general supervision, general administration, and some specialized instruction by members of the regular college staff.
10. The workshops should be in session for six weeks. (This period was later reduced to five weeks in order to conform to the College program.)

11. It should be possible for a teacher to earn eight quarter-hours of college credit, the number ordinarily earned in a similar period at the College.
12. The credit earned should be applied only toward the renewal of certificates.
13. The superintendents desiring workshops should make application to the College.

THE superintendents were reminded that it was then illegal for the College to operate workshops away from the campus, but that there was a good possibility the legislature would pass a bill, then pending, which would legalize the practice. The bill empowering the State Teachers College Board to provide, in connection with the operation of state teachers colleges, refresher and professional workshop courses for instruction on and off the campus, was passed on April 20, 1943. Immediately the President of the College asked the writer to organize, supervise, and administer the off-campus rural workshops where they could be arranged in accordance with the agreements of the March conference and the requirements of the law.

Four workshop centers materialized. These were located in urban county seats at distances from Moorhead varying from 46 to 70 miles. Three of the directors engaged were high-school training department instructors; one was the rural-school supervisor of the College. One of the demonstration-school teachers engaged was a high-school training department instructor; the other three were supervising teachers in the rural schools co-operating with the College.

At a third conference held at the College early in May, attended by the county superintendents of the counties where the centers were to be located, the directors, the demonstration-school teachers, and members of the Division of Education, various decisions were reached. The most pertinent of these had to do with the professional books and materials needed for the participants and the school supplies to be ordered for use in the demonstration schools.

In order that the directors and demonstration-school teachers might have matters well in hand from the start, a three-day conference was held at the College early in June. At this conference the directors and demonstration-school teachers discussed the philosophy and operation of workshops with the

President, members of the Division of Education, and each other. Details concerning registration, records, and reports were made clear. Units of work were planned, and the time to be devoted to observation of teaching, discussion of the observations, individual projects, class activities, study, social affairs, and many other phases of the work, was determined more or less precisely. Plans were also laid for special assistance at the different centers by certain members of the College staff and by members of the state departments of Education and Health. As the College was already in session there was opportunity also to observe the way the director of the rural workshop at the College started her work.

IN THE four off-campus rural workshop centers, a total of 96 participants (95 women and one man) and 71 children were enrolled. That was gratifying in view of the fact that the operation of off-campus workshops was a first venture for the College and the people involved in their organization, and that only a short time was available between the time the legislature legalized off-campus workshops and the date they began operations.[1]

The children attended from 9:00 to 11:30 A. M. four or five days a week. The participants attended five days a week; their hours of attendance varied somewhat in the different centers, but in general extended from 9:00 A. M. to noon and from 1:00 to 3:30 P. M. Usually the participants observed the demonstration school work during the morning and discussed it from 11:30 to noon with the director and demonstration-school teacher. The afternoon was spent in group discussion, listening to lectures, attending conferences, committee work, working on individual projects, and various kinds of social activity.[2]

A considerable amount of information about the participants was obtained by means of questionnaires submitted to them at the beginning and the end of the workshop period. Only a small part of this information can be summarized here. The 96 participants came from 11 counties, but most of them came from counties where the centers were located. Fifty-two came from farm homes. More than half lived less than twenty

[1] The law was passed on April 20 and the workshops opened June 14.

[2] For a description of one of the workshops, *see* Keithan, Luella. "A Rural Off-Campus Workshop in Action," *Minnesota Journal of Education*, XXIV (October, 1943), p. 65.

miles from the workshop centers. Since the workshops were established largely for married women, it is significant that only 19 of the group were single. Thirty-eight of the women had children and 14 had grandchildren. While attending the workshops, most of the women left their homes in the care of their families or of hired help. The attendance of the participants was remarkably good. Only five were absent more than one day and no one was absent more than five days. The workshops were successful in attracting former teachers; the median number of years the participants had taught was eight. Two had never taught, many had taught less than one year, and 41 had not taught for ten years or longer. In July, 66 already had contracts to teach in rural schools. All who wanted to teach undoubtedly were given contracts before schools opened in September. Only 31 of the participants were not interested in teaching after the emergency was over, while 33 stated definitely that they intended to continue to teach after the emergency. It is reasonable to believe that most of the sixty-three others were former teachers who had been brought back into service or possible service by the workshop experiment.

A somewhat disturbing fact was that 40 of the group would have attended college had there been no off-campus workshop centers. The plan was not to provide refresher courses for people who could attend college but, as previously stated, specifically for those who could not. Perhaps another year, unless the purpose is changed, greater care must be exercised by the College and the county superintendents in their enrollment procedures.

It was evident that the participants had found the workshops helpful. They were most enthusiastic about the demonstration schools and very generous with complimentary remarks about the directors and demonstration-school teachers.

The College was able to give a considerable amount of service to the workshops while they were in operation. The writer visited each center from three to five times and gave two lectures in each, dealing respectively with the characteristics of the master teacher and perceptual aids to learning. Instruction was provided for each workshop by one of the instructors of the Division of Health, Physical Education, and Recreation. Two other members of the College staff each managed to visit at least one of the centers.

In some instances, additional instruction along various lines of interest, such as reading, travel, geology, geography, and health education, was provided by the county superintendent, city school superintendent, leading citizens, salesmen, and members of the state departments of Education and Health.

WHEN the workshops closed in July, the county superintendents, directors, demonstration-school teachers, members of the Division of Education, and the President of the College met on the campus for a final conference to evaluate the experiment. Ideas were exchanged freely and the good and bad frankly discussed. Out of this conference came an agreement concerning points requiring particular attention should off-campus workshops be tried again. They were:

1. More adequate provision of reference material
2. Avoidance of lectures by book salesmen (It was felt that the lectures given by the book salesmen had been good, but that it was unethical to open the way to only a few of the salesmen)
3. Enrollment of some seventh- and eighth-grade children in each demonstration school
4. Clearer definition of the use that can be made of the credits earned (A number of the participants desired credit toward the advanced certificates and not merely for the renewal of certificates)
5. More emphasis in the recruiting campaign on the type of person for whom the workshops are intended so that those who can go to college will not enroll in them (This is a debatable question of policy)
6. Consideration of the possibility of having rural instead of urban children in the demonstration schools
7. Avoidance of duplication of material presented in lectures

The general opinion of the conference was that the off-campus rural workshop experiment had been successful beyond expectations. This opinion was based, to a large extent, upon the reactions of the participants to questions, and the judgments of the county superintendents, directors of the workshops, and teachers of the demonstration schools. At any rate, at least a few former teachers were brought back into service in the rural schools of western Minnesota. Because they took advantage of the educational opportunities offered them in the off-campus workshop centers, they are now, it seems reasonable to believe, more expertly helping in the development of rural boys and girls.

# The Problem of Materials in Art Appreciation

*By* JAMES W. GRIMES

IN GENERAL practice our main reliance for visual materials in teaching art appreciation has been on photographic reproductions of works of art. These have been selected from various historic periods with an emphasis on old masters. Such material is ubiquitous, and since its use has not been widely challenged and alternative sources of material have not been suggested, it has been used almost exclusively. Consequently, the teaching of art appreciation has been weak and ineffective. Few teachers of art appreciation would claim that, as a result of their efforts, students pursue richer lives through added sensitivity to qualities of the visually perceived materials of life.

Frey has pointed out that what we can experience in looking at a reproduction of a work of art is strictly limited and in no way comparable to the potential experience of actual visual contact with a work of art itself. He says:

> Practically all of our contacts are with machine-made reproductions in thousands of forms . . . The power of all reproductions, which resides partly in their availability and their wide distribution, is a process of slow strangulation which extinguishes the innate capacity of the average man to use his creative imagination.[1]

In testing the validity of this point of view, Grimes and Bordin experimented with individuals' reactions, in a controlled situation, to originals and their colored photographic reproductions. They concluded:

> The results gave indications that, under the experimental conditions, the majority of the subjects could be expected to have visual experiences with the reproduction which were perceptually different from those with the original. Furthermore, the subjects seem to be able to identify, with a frequency better than chance, which of these different experiences is with the original. This means that the two objects are not behaviorally equivalent.[2]

It would be ridiculous to claim that reproductions, in either

[1] Frey, Erwin F. "Three-dimensional Living," EDUCATIONAL RESEARCH BULLETIN, XIX (May 8, 1940), pp 293–97.

[2] Grimes, James W. and Bordin, Edward. "A Note on the Interchangeability of Art Originals and Colored Photographic Reproductions," *Journal of Educational Psychology*, XXXI (May, 1940), pp. 381–82.

black and white or color, are useless in teaching art appreciation. They do have a value and use, if an exceedingly minor one. If, however, the development of creative imagination is the important objective in teaching the appreciation of art, reproductions can be counted on to contribute little. Such materials are not of sufficient experimental value to furnish the major substance of visual materials in any study in which art appreciation is an objective. From their present dominant position in education they must be relegated to a supplementary one if teaching is actually to affect the choices and reactions persons make in daily living.

Art teachers may agree with this point of view and counter with the statement that the locale in which they teach simply does not have original material of sufficient value or quantity. This may be partially true, but have all potential resources been canvassed? In answer to this question the following is proposed as a list of resources which are available in the typical community. Listed first are resources which exist in the community, and then those outside, which can be utilized within the community.

THE layout of a town and its architecture, both domestic and public, contemporary and historic, are one source of important and valuable material. This is the over-all visual environment in which the young people of the community are developing standards. Local examples of architecture and town planning can suggest vivid and realistic approaches to an appreciation of form and quality in organized relationships.

Original sculptures are apt to be few and are frequently of a memorial type, as in churches, cemeteries, and public monuments. The quality is not apt to be high. This is, however, a challenge, for inadequate as the public monument or funeral ornament may be, the student ought to see it critically and make judgments about it, rather than blindly accept it as a casual part of his environment. Privately owned small sculptures are frequently found, while the recent widespread development of ceramic sculpture furnishes a promising field for interesting works.

Four categories of pictures can be considered: flat wall painting on both interior and exterior walls of buildings; painted framed pictures, as water colors, oils, and temperas;

mural decoration or paintings; and stained glass or mosaic. A survey of pictures privately owned in the community should be undertaken, and clubs or organizations interested in the arts contacted. Courthouses and various public institutions frequently own paintings. Antique dealers are a possible source.

Many crafts are widely practiced as both occupations and hobbies — cabinet-making, decorative embroidery, weaving, print making, pottery, jewelry, and so on. Craft articles of considerable merit are frequently treasured as antiques.

Unusually talented students emerge from time to time. The best examples of their work from various stages of their development should be kept as illustratory and exhibition material.

People who work with their hands to create things are invariably interesting people. They should be contacted and used as valuable resources for demonstrations, visits to shops or studios, talks and discussions in the class, points of view and assistance in developing an art appreciation program in the community. A list of possibilities would include: architects, engineers, commercial artists, display artists, antique dealers, cabinetmakers, carpenters, decorators, painters, sculptors, ceramic artists, dressmakers, weavers, and so on.

As an example of one type of service, the Columbus Gallery of Fine Arts has three cased displays for use in schools. Each consists of a large decorative map of a country or area to which are secured fragments or small articles actually made in that country. All the artifacts used are original material, many of them very old. As requests for original material come to our museums we can expect an expansion of their services. Local and other museums can be queried for information concerning services through traveling shows, and other means. The following is a list of museums and galleries in Ohio:

Akron Art Institute
Butler Art Institute, Youngstown
Campus Martius, Marietta
Canton Art Institute
Cincinnati Museum Association
Cleveland Museum of Art
Columbus Gallery of Fine Arts
Dayton Art Institute
Dudley Peter Allen Memorial Art Museum, Oberlin
Johnson-Humrich House Memorial Museum, Coshocton
Massillon Museum
Ohio State Museum
Toledo Museum of Art

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# EDITORIAL COMMENT

## An Uncontrolled Variable

It is probable that many researches in education and other fields having to do with human behavior have been less rigorously controlled than they seem to be, because of the failure to take adequate account of an important factor. This factor is the mind-set or attitude of the subjects in the experimental groups as compared with that of other persons, including those in the control groups.

The importance of this factor showed up clearly in a series of studies carried on by an enlightened factory management, an account of which we read not long since. Production in the factory was abnormally low and was attributed to poor working conditions. The experimenters tried various modifications in those conditions designed to increase comfort and reduce strain on the part of employees, and thus increase production. To their surprise, they discovered that almost any change they tried led to increased production. Increased light in the factory, for example, had this effect, but so did decreased light; the same was true of both longer and shorter intervals between rest periods. There seemed to be no rhyme or reason in the situation. At last it dawned on the experimenters that the critical factor was the attitude of the workers. The latter knew that the management was making a serious effort to improve working conditions and hence felt that they were being treated as human beings rather than mere cogs in a vast machine. Hence, whatever change was made, morale improved and production increased.

The situation which often obtains in educational experimentation is not altogether dissimilar. The students in the experimental group know that they are participating in an experiment and feel a challenge to put forth their best efforts —a challenge which is not experienced by students under ordinary conditions or in control groups. In other words, their morale is higher. And there is ample evidence of the influence of morale on performance. It is probable that in many cases the better performance of the experimental group is due in considerable measure to this factor.

The research reported by Mr. Sherman elsewhere in this issue furnishes a case in point. The students in the experimental group were chosen by chance and "through their willingness to participate in a novel experiment." It can hardly be doubted that students with this initial attitude, participating in such an unconventional procedure as Mr. Sherman used, experienced a challenge lacking in the case of other students. To use a slang expression, they must have gotten a big kick out of their experience. This may account in part for their improved performance. To say this is not to question the value of Mr. Sherman's project. Far from being of questionable value, it seems to us to be of very great significance. We are happy to publish the first report of it. It is mentioned here merely as a convenient example with respect to the point under discussion.

If it be true that mind-set or attitude is an important factor which has hitherto received too little attention, this fact has profound implications for educational research. Experimenters are bound to control it so far as they can (a difficult task) and to take careful account of it in interpreting their results.

R. H. E.

## Co-operation in Research

THE article, "The Eye in the Arts," by Hoyt Sherman, published elsewhere in this issue, is notable not only for its content but because the study of which it is the first report was carried out in accordance with two important policies of the Bureau of Educational Research. Both policies emphasize the importance of co-operation in research; one has been in operation a little more than a year while the other goes back over a much longer period. The newer policy is that described by T. C. Holy in our issue of January 13, 1943, in accordance with which "full or fractional time of members of the staff of the University" may be assigned by the President to the Bureau of Educational Research "for the prosecution of appropriate investigations." One of the first projects for which time of staff members was assigned was that proposed by Mr. Sherman.

The older policy represented by the project is that of setting up advisory committees to work with the directors of important studies. Such committees are selected so as to include

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# READINGS

## *Books to Read*

WINN, RALPH B., editor. *Encyclopedia of Child Guidance.* New York: Philosophical Library, 1943. xvi+456 pp.

The value of a work of reference depends in large measure on the facility with which certain information may be found. If anyone expects to find information in the field of child guidance easily in this encyclopedia, he will be disappointed. If he reads the book through as he would a treatise, he will find a great deal of information. The seventy-odd collaborators are men and women of professional training and wide experience, many of them persons of distinction and quite competent to give information in this field. But if anyone on receiving a report on child guidance wishes to look up information about some specific term, like *schizoid personality*, he may have trouble. The term itself is not given as a separate topic. He tries *Personality* and *Types* of *Personality*, which are given, but they do not include what he is looking for. How is he to know that he should have looked under the heading—*Preneurotic and Prepsychotic Trends?* The reviewer finds similar difficulty in locating discussion of mechanisms (dynamisms) such as *rationalization*, *regression*, or *repression*, or even the term *mechanism* itself. One predicts that the lack of a systematic index will prevent any extensive use of this enclyclopedia as a work of reference.

Even as a treatise the book is disappointing. Why omit discussion of the program of child guidance as a whole, its aims and purposes, its organization and administration? What of the qualifications and professional training of personnel? In spite of the excellence of many of the individual articles, the book as a whole is unsatisfactory.

FRANCIS N. MAXFIELD

COLEMAN, ROBERT, JR. *The Development of Informal Geometry.* New York: Teachers College, Columbia University, 1942. xii+178 pp. (Teachers College, Columbia University, Contribution to Education, No. 865)

Informal geometry is now well established in the curriculum of the secondary school and in this book the author presents a scholarly and comprehensive discussion of the forces and influences which led to this result. He defines informal geometry as "geometric instruction based not upon deductive logic of the Euclidean type but upon experimentation, intuition, sense perception, induction, and simple informal reasoning," and traces the development of this branch of mathematics in Germany, England, and the United States from the beginning of the nineteenth century to recent times. In an effective manner, the author shows how the reforms proposed by Pestalozzi, Herbart, and Froebel were responsible for the introduction of informal geometry in the elementary schools of Germany and how this emphasis was continued in the secondary schools through the influence of Felix Klein. He traces this development as it affected mathematical education in England through the "Perry movement" and received official approval in the famous

1923 report of the British Mathematical Association. The influences which led to the introduction of informal geometry in the elementary and secondary schools of the United States are examined, and the recommendations of such important groups as the Committee of Ten, the Committee on College Entrance Requirements, the Committee of Fifteen, the National Committee on Junior High School Requirements, and the Joint Commission are analyzed.

In a summary of the entire study, the author points out that, in general, informal geometry is taught because of its value in a general education, as a preparation for the formal study of Euclidean geometry, and as a preparation for technical studies. In making this study, Mr. Coleman examined 204 references, including speeches, textbooks, professional books, and numerous articles involving the complete files of many magazines. The thoroughness of this work will undoubtedly recommend it to the mathematical historian, but it will be of little practical value to classroom teachers of mathematics.

HAROLD P. FAWCETT

HOCKETT, JOHN A., AND JACOBSEN, E. W. *Modern Practices in the Elementary School.* Boston: Ginn and Company, 1943. iv+346 pp.

One of the major obstacles to the widespread acceptance of functional experience education has been lack of understanding of its principles and, especially, of effective ways of applying those principles in educational practice. It is at the levels of materials and techniques that the lack is most obvious. Many teachers, uncertain of how to adapt "experience education" to their situations, decide to play safe and continue to follow formal procedures.

There is no dearth of books designed to meet these needs, for many authors, recognizing the difficulties mentioned, have written interpretations of "modern education." Unfortunately, a large percentage of such works are too general or too theoretical to be of practical use. The need is for material which answers questions teachers have, which clarifies problems teachers recognize, and which presents its information in language which teachers understand.

This need was met conspicuously well by these authors who, after wide experience with teachers in service and teachers in preparation, presented *Modern Practices in the Elementary School* in 1938. Written in terms of "the modern organic conception of education," the book explained these theories in terms of school practices. The widespread acceptance of the book and the continued demand for it are evidenced by the fact that it has been necessary to issue a new edition.

The book is especially strong in its treatment of the unit of work, managing the daily program, constructive discipline, and teachers' resources. It meets a need of many educational courses for teachers and should be in the professional libraries of public schools.

LOWRY W. HARDING

HART, ARCHIBALD, AND LEJEUNE, F. ARNOLD. *The Latin Key to Better English.* New York: E. P. Dutton and Company, 1942. 9+226 pp.

So your ration-points for meat are running out? You may not feel like it, but you are about to celebrate *carnival* (—"farewell to meat"; feastmaking just before Lent). If your terrier enjoys digging holes in the lawn, it may be the semantics in him; for the *terr* of his name is from *terra* ("earth")—to which his first-named ancestor pursued his quarry.

A dip anywhere into *The Latin Key to Better English* will keep you reading on. Despite its rather depressing title, the book is lively and stimulating. Written, as its title page indicates, "for those who have never studied Latin, as well as for those who did but have forgotten it," it should have a wide appeal, for that address includes most of us, I imagine. The arrangement of the material is practical, businesslike: Chapter I introduces us to "Twenty Useful Prefixes," followed by five chapters of "The Most Useful Latin Words." The remaining chapters take up in detail the contributions to English of more than 200 Latin root-words—all set forth in handbook style, with numbered sections.

The only fault in the book seems to me to be in its occasional failure to provide a link between the Latin word and its English derivatives. Sometimes the connection is left obscure—or is almost completely lacking, as in L. *Vetus*—E. *veterinary*. Skeat's *Etymological Dictionary* does not show a definite relationship between these two words. But this defect—if defect it can be called—is minor; and, all in all, *The Latin Key to Better English* is an eloquent reminder that, in order to read and write English intelligently, it is necessary at least to have forgotten a substantial amount of Latin.

TOM B. HABER

HOLY, T. C., AND DOTY, CORNELIA. *Survey of the Girls' Industrial School, Delaware, Ohio.* Columbus, Ohio: Ohio State University, 1942. xiv+288 pp. (Bureau of Educational Research Monographs, Number 27)

This volume presents another survey made under the same general organizational set-up as was used in the *Survey of the Boys' Industrial School at Lancaster, Ohio.* To one who has read the previous volume, this one presents few new techniques, but reveals the careful, scientific collection of data, the impartial interpretation thereof, and clear, definite conclusions evident in the former volume. Every phase of the institution and its management came under the examination of the staff, and the detailed information is thoroughly organized and leads conclusively to the recommendations which are presented. In all instances, the recommendations are clearly stated, pertinent, and feasible.

Mr. Holy and his staff have made a distinct contribution to this phase of welfare work, not only in Ohio, but throughout the nation, by the exceptionally thorough procedure reported in these volumes. With these facts in the hands of the Department of Public Welfare, there is every reason why the next few years should show sound, progressive development in the organization, administration, and general program of welfare work as applied to these institutions.

E. J. ASHBAUGH
*Miami University*

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## The Problem of Materials in Art Appreciation

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Other agencies also can be of use in this connection. Departments of art in colleges and universities frequently are in a position to furnish exhibitions of work by faculty members and

students. Certain commercial enterprises, such as Binney and Smith, 41 East 42nd Street, New York City, have available traveling exhibitions of children's art work.

In the opinion of the writer, the only possible realistic approach to education in art appreciation is through first-hand contact with works of art. Reproductions should be used only as second-hand aids and recognized as such. In any community the art teacher's first problem is to survey and utilize whatever original material is at hand. This may be of poor quality, even so poor that appreciative experiences at a high level cannot be expected. Even so, the desirable point of departure is with this material. This raises a second problem: How can the community be stimulated to recognize the need for works of art of sufficient quality to contribute significantly to the daily lives of the citizens? Certainly we cannot solve this problem until we attack it. We cannot say that the community is not interested, until we have made clear the existence of the need.

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## Editorial Comment

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specialists from various related fields, which ensures against narrowly conceived investigations.

Members of the committee for Mr. Sherman's project are: Louis H. Diercks of the Department of Music, Floyd C. Dockeray and Robert Walker of the Department of Psychology, Glenn Fry of the School of Optometry, James R. Hopkins of the Department of Fine Arts, Robert Monroe of the Department of Romance Languages, Louis E. Raths of the Department of Education, and Horace B. English of the Department of Psychology, who is chairman. While not a member of that committee, Ross L. Mooney of the Bureau of Educational Research assisted in writing the article and is collaborating in the preparation of the complete report which is soon to be published. The project, therefore, is the result of the thinking of a number of people in various areas of competence.

R. H. E.